Ecological Niche Modeling: A Crash Course

Pam Soltis, Charlotte Germain-Aubrey, Blaine Marchant, Clayton Visger, Lauren Gonzalez

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Other iDigBio Personnel:

Kevin Love, Molly Phillips, Gil Nelson

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Ecological Niche Modeling (AKA Species Distribution Modeling): A Crash Course

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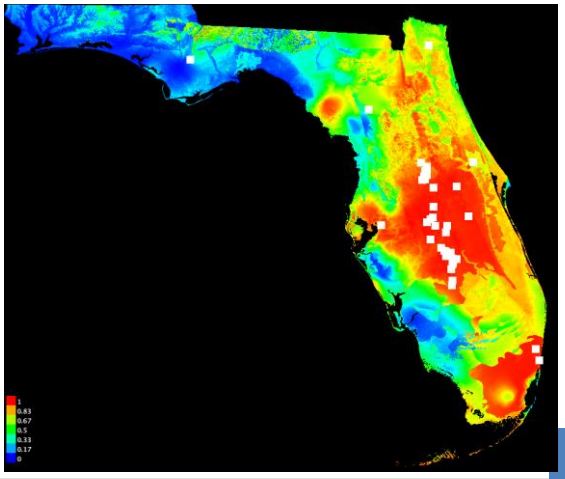
Logistics

- Crash course
- Materials on wiki at iDigBio
- Stop us with questions
- Box lunches provided by iDigBio
- Come and go as you need…



Overview of Day's Activities

- 8:00 Introduction to the workshop & participants – Pam
- 8:20 Introduction to concepts of ENM – Charlotte
- 8:30 Examples of ENM – Charlotte, Blaine, and Clayton
- 9:00 Sources of locality data – iDigBio demo – Pam
- 9:30 Georeferencing concepts – Blaine
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- 1:00 Interpreting Maxent results - Clayton
- 1:30 Projecting results to different times and areas – Blaine
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- 4:50 Summary – Pam
- 5:00 End

Using Museum Specimens in ENM

- Herbaria important sources of information on past and present species distributions
- Location information and environmental data
  - temperature, precipitation, soil
- Software to model the range of each species
- Project onto other areas or future climate conditions

Label Data

- Scientific name – including authority
- Collector
- Location – state, county, specific site, GPS coordinates
- Date
- Associated species
- Notes

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Locality Data

- United States: Florida: Nassau County. Ralph Simmons State Forest. About 5 miles SE of Folkston, Georgia. From east entrance into Forest, go west and then north on dirt roads. Sandhills with young planted longleaf pines and patchy grass-forb understory.

What's in a locality?

- A description of collection location. Written from specific to general, or general to specific, including a specific locality, offset(s) from a reference point, and administrative units such as county, state, and country.

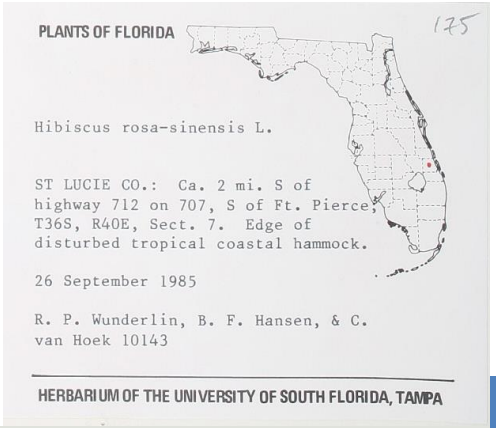
Examples:

Locality example using distance and heading along a path:
E shore of Bolinas Lagoon, 3.1 mi NW via Hwy. 1 from intersection of Hwy. 1 and Calle del Arroyo in Stinson Beach (town), Marin Co., Calif.

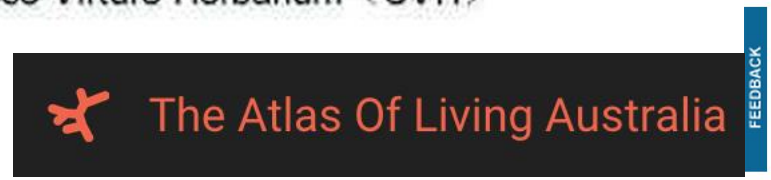
Locality example using two cardinal offset distances from a reference point:
ice field below Cerro El Plomo, 0.5 km S and 0.2 km W of summit, Region Metropolitana, Chile.

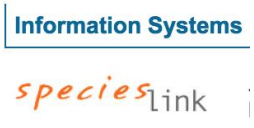
Why do good localities matter?

- Collecting data in the field sets the stage for good georeferencing procedures
- Contains useful information for other biologists
  - Future collections, conservation, ecology, taxonomy, niche modeling…



Where do we get locality data?





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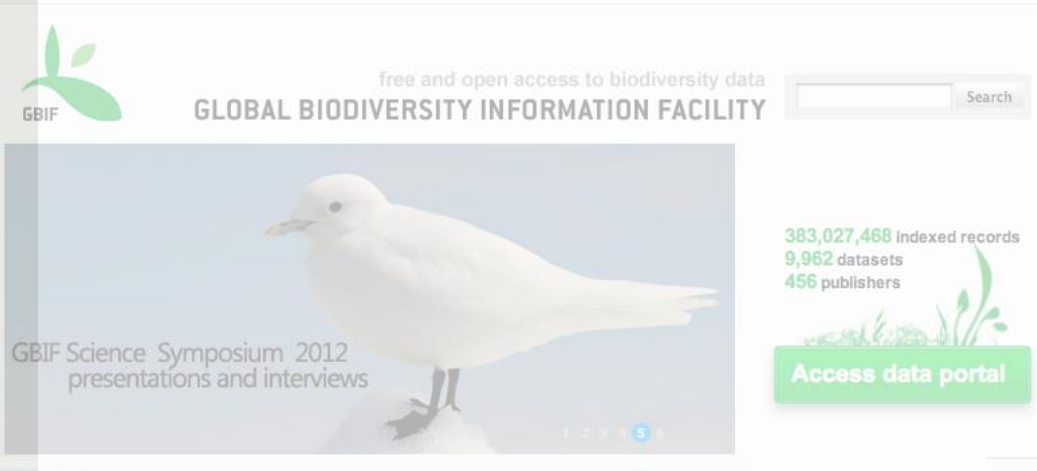


iDigBio
Integrated Digitized Biocollections
www.idigbio.org

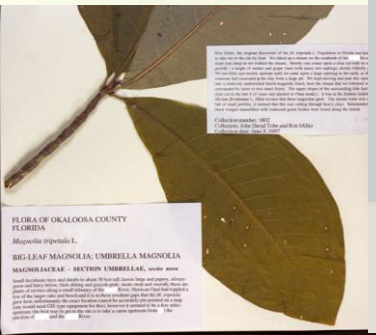
National Coordinating Center
For Digitization of Biodiversity Collections

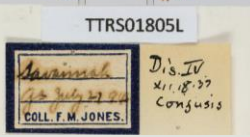
Ingest, serve, integrate data:

Localities

Dates

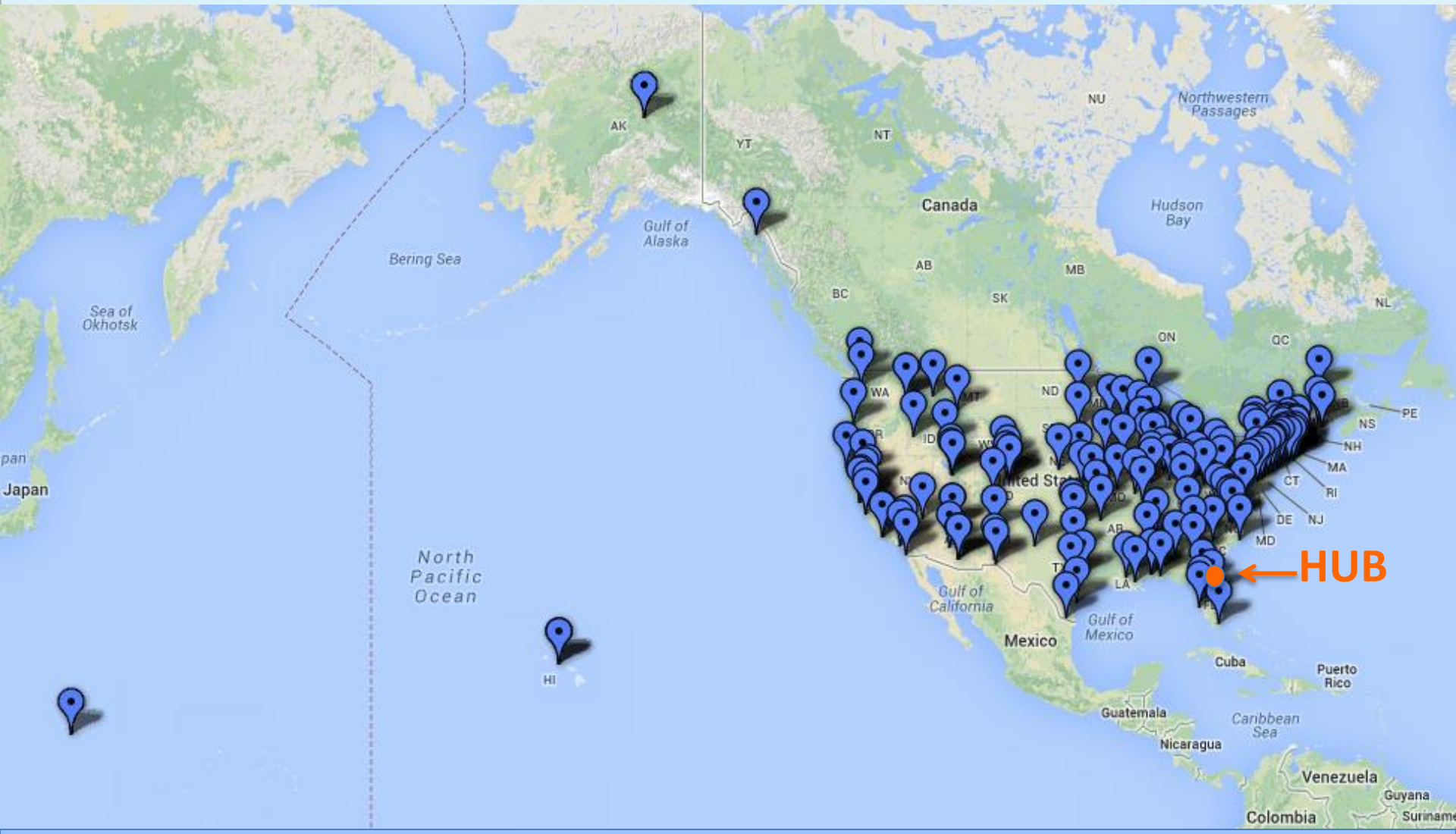
Images





iDigBio
Integrated Digitized Biocollections
National Resource for Advancing Digitization of Biological Collections

NATIONAL HUB, THEMATIC COLLECTION NETWORKS, AND COLLABORATORS



13 TCNS and collaborating institutions: 201 institutions in 50 states

Components of iDigBio

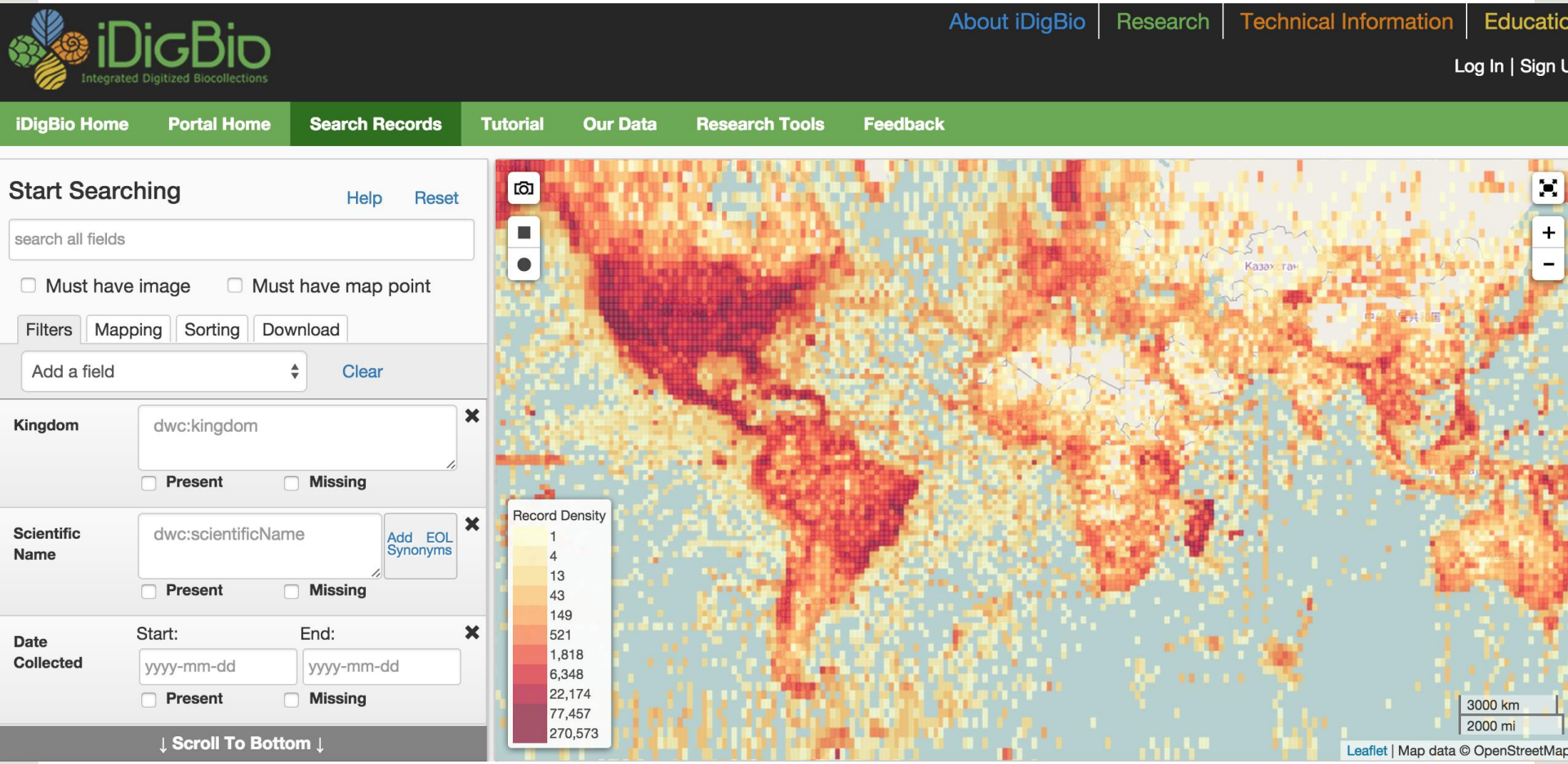
Digitization of Biodiversity Collections

Interactive, Integrative, Innovative – L. Page, PI

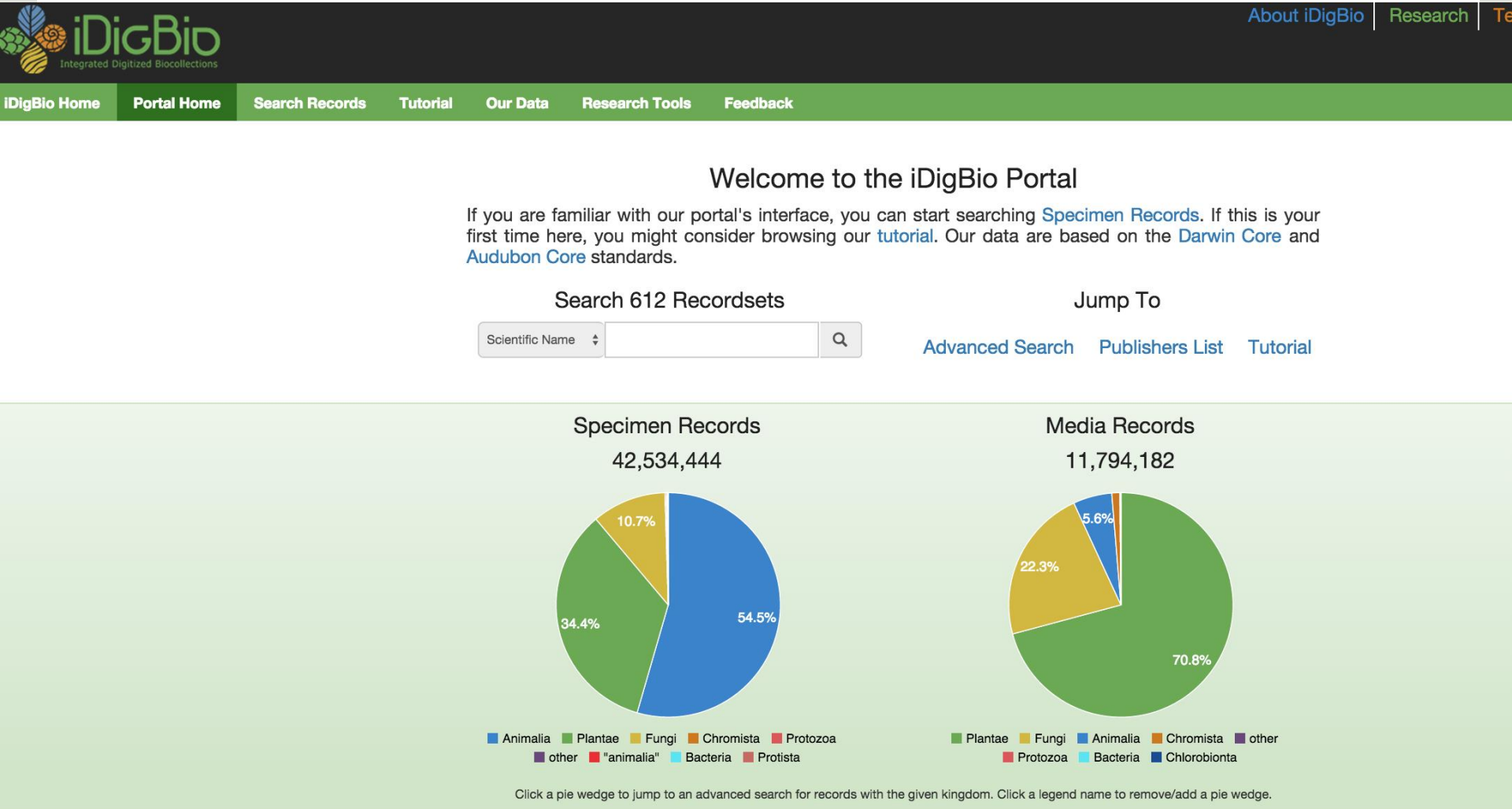
- Digitization – G. Riccardi
- Cyberinfrastructure – J. Fortes
- Research – P. Soltis
  - *Access to specimen data: Provide portal access to biodiversity data in a cloud-computing environment*
  - *Develop a computational environment to facilitate specimen-based integrative biodiversity research*
  - *Develop research workflows to anticipate computational needs and linkages*
- Education and Outreach – B. MacFadden

iDigBio Homepage

Search Specimen Records



iDigBio Specimen Portal



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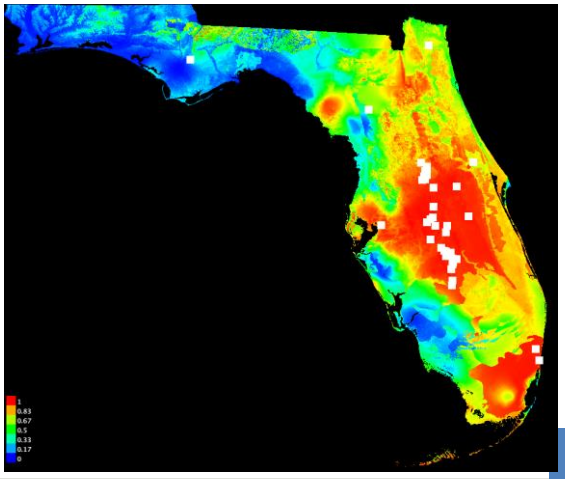
Summary

- Crash course
- Materials on wiki at iDigBio
- Contact us with questions
- Survey; suggestions?
  - Advanced georeferencing?
  - Advanced ENM?
  - Other topics?
  - Multi-day workshop?
- THANKS FOR COMING!



Thank you!

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psoltis@flmnh.ufl.edu

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webcal://www.idigbio.org/events-calendar/export.ics

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